

**Summer Training at
World Health Organization, Geneva
(April - June, 2013)**

- 1. Training and Advocacy in WHO GIEESC Program.**
- 2. Data Col Training Basic and Advanced.**
- 3. Assessment of Surgical Capacity, Obstetrics and Anesthesiology at 20 Hospitals of SEARO and EMRO Region Utilizing the WHO Situation Analysis Tool.**

**By
Saptarshi Chatterjee**

**Under the guidance of
Dr. Nutan P. Jain**

**Post Graduate Diploma in Hospital and Health Management
2012-2014**



**Institute of Health Management Research,
Jaipur
2013**

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CERTIFICATE

This is to certify that Dr. Saptarshi Chatterjee student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute of Health Management and Research, Jaipur Batch 17th has undergone summer training at World Health Organization, Geneva and has done following projects:

- Training and advocacy in WHO GIEESC program.
- Data Col training basic and advanced.
- Assessment of surgical capacity, obstetrics and anesthesiology at 20 hospitals of SEARO and EMRO region utilizing the WHO Situation Analysis Tool.

The candidate has successfully carried out the mentioned studies assigned to his during summer training from April 7th, 2013 to June 7th, 2013 and his approach to study has been sincere, scientific and analytical.

I wish his success in all his future endeavors.



Prof. NUTAN P. JAIN
Director and Mentor
IHMR, Jaipur



Dr. ASHOK KAUSHIK
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7 June 2013

To Whom It May Concern

This is to confirm that Dr Saptarshi Chatterjee, a student of the Indian Institute of Health and Hospital Management and Research (IIHMR) in Jaipur, India, successfully completed his internship with the Emergency and Essential Surgical Care Programme in the World Health Organization in Geneva, Switzerland, during the period 8 April 2013 to 7 June 2013. During his internship, Dr Chatterjee's conduct was very good.

Dr Meena Cherian
Emergency and Essential Surgical Care
Patient Safety Programme
Health Systems and Innovation

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Acknowledgement

It is with immense gratitude that I acknowledge the support, help and guidance received from my Supervisor Dr. Meena Nathan Cherian during the summer training period of two months, (08.04.2013 – 07.06.2013) at WHO Headquarter Geneva. I will always be indebted to her for the teachings and knowledge she imparted to me. I consider myself a fortunate and a privileged student, who got the opportunity to work in WHO HQ Geneva under the supervision and guidance of Dr. Meena Nathan Cherian, who not only guided me in difficult times but also made me feel at home at times when I missed the same the most.

I am indebted to my Professor and mentor Dr. Nutan.P.Jain for her constant guidance even though I was far away from my homeland India, and correcting me on every step during my course of the summer training.

I am indebted to my Professor Dr. Santosh Kumar, without whom the summer training at WHO HQ would have not been possible.

I owe my deepest gratitude to Ms Fiona Constable, who always helped me from the beginning to the end to understand the WHO official statements and protocols and also always made me feel at home by her humble ground to earth personality.

I will always be indebted to my parents my Father, Brigadier Soumitra Chatterjee and my Mother, Mrs. Kalyani Chatterjee who always supported me for the entire period of the summer training.

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Acronyms / Abbreviations

- WHO- World Health Organization.
- UN- United Nations.
- EESC- Emergency and Essential Surgical Care.
- GIEESC- Global initiative for Emergency and Essential Surgical Care.
- SAT- Situational Analysis Tool.
- GRC -Guidelines Review Committee.
- SCDH- Surgical Care at the District Hospital.
- CD- Compact Disc.
- HIV - Human immune deficiency virus.
- AIDS- Autoimmune deficiency syndrome.
- IT- Information Technology.
- HQ- Head Quarter.
- UNAIDS-Joint United Nations Programme on HIV/AIDS
- CMHO-Chief Medical & Health Officer.
- CHC- Community health center.
- PHC- Primary Health center.



Observation Learning

1. Introduction

The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that is concerned with international public health. It was established on 7 April 1948, with headquarters in Geneva, Switzerland, and is a member of the United Nations Development Group.¹

The constitution of the World Health Organization had been signed by all 61 countries of the United Nations by 22 July 1946, with the first meeting of the World Health Assembly finishing on 24 July 1948. Since its creation, WHO has been responsible for playing a leading role in the eradication of smallpox.

WHO's current priorities:-

- Communicable diseases, in particular, HIV/AIDS, malaria and tuberculosis.
- The mitigation of the effects of non-communicable diseases.
- Sexual and reproductive health.
- Emergency and essential surgical care.
- Development and aging.
- Nutrition, food security and healthy eating; occupational health.
- Substance abuse.

WHO is responsible for the World Health Report, a leading international publication on health, the worldwide World Health Survey, and World Health Day (7th-April of every Year).¹

Various Offices at WHO HQ

1. Director General's Office(DGO)
2. Family and Community Health(FCH)
3. Family, Women and Children Health(FWC)
4. General management(GMG)
5. **Health systems and innovations(HIS)**
 - Health System Policies and Workforce(HPW)
 - Blood Transfusion Safety(BTS)

- **Clinical Procedures(CPR) HOD- Dr. Meena Nathan Cherian**
 - Health System Governance, Policy And Aid Effectiveness(HGS)
 - Human Resources for Health (HRH)
 - International Health Partnerships.(IHP)
6. Health Security and Environment(HSE)
 7. Health Systems and Services (HSS).
 8. HIV/AIDS, TB and Neglected Tropical Diseases.(HTM)
 9. Information, Evidence and Research(IER)
 10. Noncommunicable Diseases and Mental Health(NMH)
 11. Partnerships, Country Focus and UN Reforms(PCU)
 12. Polio, Emergencies and Country Collaboration.(PEC)

2. Specific objective for summer training -2013

As a summer trainee under PGDHM I got the opportunity to learn as Volunteer at WHO HQ for a period starting from 8 April 2013 to 8 June 2013 and had the following objectives under supervision of Dr. Meena Nathan Cherian:

1. To enter data received from various countries into the EESC global Database.
2. To assist in the WHO Global Initiative for Essential and Emergency Surgical Care Activities including WHO GIEESC med net.
3. To assist in preparation of country reports and papers.

First two weeks: April 2013	April and May 2013	Last week May- June 2013
Orientation: library, work place, work culture.	Conferences, telecommunications : GIEESC program	Attended 66 TH World Health Assembly.
Training: WHO DataCol.	Meeting with Ministry of health of AFRO region.	Meeting with health ministry of Trinidad and Tobago for upcoming 2013 WHO GIEESC meeting.
WHO interns tour to WHO campus and staff interaction.	Participations in GIEESC program.	Utilizing the WHO SAT an assessment done on the EESC services across 7 countries EMRO & SEARO regions.
	Data entry in DataCol: WHO SAT of AFRO regions.	

2.1. Data entry received from various countries into the EESC global Database

2.1. a. Introduction

The WHO Emergency and Essential Surgical Care (EESC) program Headed by Dr. Meena Nathan Cherian is dedicated to providing life-saving surgical care to meet the need in areas of the world where the burden is high, access is low, and the disparity is great. The WHO Global Initiative for Emergency and Essential Surgical Care (GIEESC) has over 96 participating low-and middle- income countries and has 1019 members to the present date.²

WHO Situational analysis tool (**SAT**):- It is to assess the gaps in the availability of Emergency and Essential Surgical Care (EESC). The SAT was developed using the help of the WHO Data Col by WHO information technology professionals.²

The WHO Integrated Management for Emergency & Essential Surgical Care e-learning toolkit (CD) has been developed by the Clinical Procedures Unit in collaboration with the Global Initiative for Emergency & Essential Surgical Care members. This tool targets policy-makers, managers, and health-care providers (surgeons, anesthetists, non-specialist doctors, health officers, nurses, and technicians). This tool contains WHO recommendations for minimum standards to improve quality and safety of emergency, surgery, trauma, obstetrics and anesthesia at first-referral level health-care facilities.²

2.1.b. How to enter data in the WHO DATA COL?

- a) What is WHO Data Col?
- b) Data Col forms.
- c) Form usage
- d) Field properties.
- e) Basic roles.

a. What is WHO Data Col?

Data Col is more than a survey tool, it allows a person to use it as a **Form Builder** which includes the following:-

- To collect data from WHO staff and/or external partners.
- To view data / share /edit collected data.
- To publish data /embed into web page.

A non WHO or a WHO member can submit the data in the data collection pool which is viewed and updated by the administrator and shares the data either through online basis in the form of table view, aggregated view, report view, or in the form of group view. The data can also be exported to the excel sheet and can be sent to the desired person requiring the information. Data Col is a web-based tool that uses online forms and simplifies the process of collecting information³. Data is stored in a database maintained by central IT on WHO-HQ Intranet servers, so it is secure, backed up daily, and always available³.

b. Data Col forms:-

- A form is a web document used to collect information from respondent.
- Creating a form requires Microsoft Internet Explorer.
- Completing and viewing a form requires any browser (Internet Explorer Windows or Mac, Netscape, Firefox).
- Form can be:
 - Anonymous.
 - Authenticated (user name can be encrypted).
 - Restricted to a set of users (list of users or org. unit).

On submission, the form's fields are validated against input type (email, number, date) and mandatory fields.

c. Use of Forms:-

- Online surveys and questionnaires.
- Evaluation forms(e.g.,training feedback).
- Electronic voting.
- Document repository.
- Simple FAQ management system.
- Bug-reporting systems.
- Team activity logs.
- Publication ordering.
- Site visitor log books.
- Meeting reservation forms.
- Intranet/Internet content management.

d. Field properties:-

- Form structure includes title, description, section and field.
- A field is a component of a Data Col form and is used to obtain information from form respondents.
- It is composed of two elements: **a prompt**, (question to be asked) and **a response** (answer to the asked question).
- A field can be mandatory or hidden.
- Response fields can use following input types:
 - Radio.
 - Checkbox.
 - Short text.
 - Long text.
 - HTML text.
 - List.
 - Entity list.
 - Country list.
 - Data Col list.
 - DB list.
 - Linked list.
 - Date.
 - Short Date.
 - Email.
 - Number.
 - URL.
 - File

e. Basic roles:-

- Form creator: - is the user who creates a Data Col form. The form creator has full rights to edit and delete the form.
- Form administrators: - are users who have been granted the right to edit a form by the form's creator. Form administrators have the same rights as the form creator, except that they cannot delete the form.
- Authenticated respondents:-are users who have provided a valid user name, password, and domain. Authentication is a way of verifying the identity of form respondents.
- Anonymous respondents:-are users who fill out and submit forms that do not require authentication³.

f. The advantages of Data Col in Health and Hospital management:-

- Reduction of efforts and time of collection of data
- Storage of data in a common platform from where the health professionals, academia, stakeholders and students can share and utilize the data.
- Privacy policy and ethical issues can be maintained through specific security access codes.
- Online survey and online feedback mechanism.
- The data can be easily imported to the Excel format and can be utilized in study purpose and review purpose.
- Survey forms can be constructed as per the requirements, by formulating survey specific questionnaire.

2.2. Assist in the WHO Global Initiative for Essential and Emergency Surgical Care Activities including WHO GIEESC med net.

2.2. a. Introduction:-

Med Net is a WHO collaborative platform for scientific information exchange and sharing. Med Net has been developing and hosting websites for healthcare practitioners since 1998. Currently it manage the websites for over 2,500 healthcare service providers worldwide, ranging in size from large hospital systems to individual medical, dental practices.⁴

Countries with developing economies have not considered surgical care to be a public health priority, yet surgically treatable conditions such as cataracts (Javitt 1993); obstructed labor (Neilson and others 2003); symptomatic hernias (Olumide, Adedeji, and Adesola 1976; Rahman and Mungadi 2000); osteomyelitis (Bickler and Rode 2002; Hilton 2003);otitis media (Smith and Hatcher 1992;Whitney and Pickering 2002); and a variety of inflammatory conditions add a Chronic burden of ill health to populations. These acute and chronic conditions take a serious human and economic toll and at times lead to acute, life-threatening complications.⁵

WHO Med Net is a platform where a health professional including general practitioner, emergency physicians, anesthesiologists, surgeons, dentist, health managers, information technology professionals, Health Ministry staffs of various countries, non-governmental bodies, private sector companies, policy makers and stakeholders can come under a single roof and can share and discuss the current events and

the past events regarding the EESC program of WHO taking place at different health institutes, hospitals and private sector bodies. Through WHO Med Net invitations can be sent to different stakeholders, health professionals, and those who are interested to be a member, it is simple and easy and can be done by just clicking the link <http://mednet-communities.net/?s72daltfphgcryg>, created by the IT professionals.

WHO GIEESC is an integral program of the WHO Med Net which is dedicated to providing life-saving surgical care to meet the need in areas of the world where the burden is high, access is low, and the disparity is great.³

2.2. b. Training received and programs attended in WHO during the summer training period from 7 April-8 June 2013:-

1. WHO training attended :-

- a) Basic WHO Data col training seminar.
- b) Advanced WHO Data col training seminar.

Link:

<http://intranet.who.int/homes/iwa/support/trainings/#40597>

- c) WHO Situation Analysis tool (SAT) reformatted from 260 questionnaires to the current format containing 108 questionnaires as per the new WHO SAT.
- d) Data entered using the WHO SAT in the WHO Data Col for more than 10 countries.
- e) More than 100 invitations of WHO GIEESC Med Net membership were sent to different health professionals, stakeholders, and Health Ministry officials representing various countries.



2. Lectures Attended with:-

PIC 1: 66TH WORLD HEALTH ASSEMBLY

- 1. An introduction to “Systems Thinking for Health Systems Strengthening” by Dr.Taghreed Ada attended in the event of WHO interns meeting.
- 2. Immunization Week Info Session attended at the Kofi A. Annan Conference Room.
- 3. World Immunization Week, the Expanded Program on Immunization (EPI) attended.
- 4. Consumer’s education in Food safety was attended in the event of WHO interns meeting.
- 5. WHO work on HIV: Key issues and challenges on HIV attended in the event of WHO interns meeting.
- 6. Meeting to launch the 2010 GBD (Global burden of disease) from unsafe injections was attended.
- 7. Launch of the WHO Global Alliance for Care of the Injured, was attended at the 66th World health Assembly, which was held at Palais des Nations (UN).
- 8. Seminar on patient safety and the current technological review was attended

3. Participated following Meetings with Dr. Meena Nathan Cherian, in WHO EESC program:-

1. Meeting was held with Dr Susan Norris on the update of WHO manual Surgical Care at the District Hospital (SCDH) GRC (Guidelines Review Committee).
2. Meeting was held with, Ms.Carmen Mihaela Dolea on the update of WHO manual Surgical Care at the District Hospital (SCDH) GRC.
3. Meeting was held with Dr Islene Araujo de Carvalho, regarding the Policy Dialogue meeting on Ageing and Health.
4. Meeting was held with Dr. Emmanuel M. Makasa, MD, MPH representing the state of Zambia in the permanent mission at UN regarding the promotion of the WHO Global Initiative for emergency and essential surgical care, and presenting him with an IMEESC Toolkit on.
5. Meeting was held with Mr. Constant Ministry of Health, Trinidad and Tobago regarding the upcoming GIEESC meeting on 14 and 15 of October 2013 and presenting him with an IMEESC Toolkit.
6. A presentation on IMEESC Toolkit to Dr. Joseph Musowoya, Vice president of the Surgical Society of Zambia was done.
7. Advocacy done, in promoting WHO GIEESC during the 66th World Health Assembly to different health officials and health professionals.

4. Tele Conferences:-

1. Tele conference meeting was held with Dr. Nutan P. Jain regarding the Survey of emergency, trauma, obstetrics, anesthesia and surgical services care capacity across district hospitals and community institutions in Rajasthan, India.
2. Tele conference with Dr. Fizan Abdullah MD PhD from John Hopkins University on planning the upcoming GIEESC meeting at Trinidad and Tobago on 14 and 15 October 2013 was held.

2.3 Assist in preparation of country reports and papers.

1. Prepared a report on the implementation of IMEESC toolkit at WHO-MOH (Ministry of Health) Meeting on 7-11 April 2013 Bujumbura; Burundi, at the district level health centers, headed by Dr. Meena Nathan Cherian.
2. Under the supervision of Dr. Meena Nathan Cherian and Dr. Nutan P. Jain a proposed draft for a survey on emergency, trauma, anesthesiology, obstetrics and surgical care capacity across district hospitals, community health and primary health center in Rajasthan, (India) utilizing the WHO situation analysis tool (SAT) was prepared.
3. List of participating WHO GIEESC members from African countries was prepared regarding the upcoming African regional workshop on August 2013 at Congo Brazzaville.

a. Information related to Data col and the operating the Data col system was gained and thus was utilized in entering data collected from different countries utilizing the WHO Data col.

c. Advocacy in GIEESC program utilizing (IMEESC tool kit), prepared by the WHO was done and the process of promoting the product was learnt and how to create awareness on the emergency surgical care. The IMEESC toolkit gave the following information

- Policy Management.
- Quality and Safety Tools.
- Best Practice Protocols.
- Disaster management Resources.
- Equipment list and needs assessment.
- Training workshops.
- Teaching and references: surgery, emergency, obstetrics, anesthesia, trauma, and orthopedics.
- Research tool.
- And prerecorded videos on wound, fracture, head/spinal injuries, caesarean section, vacuum Extraction.

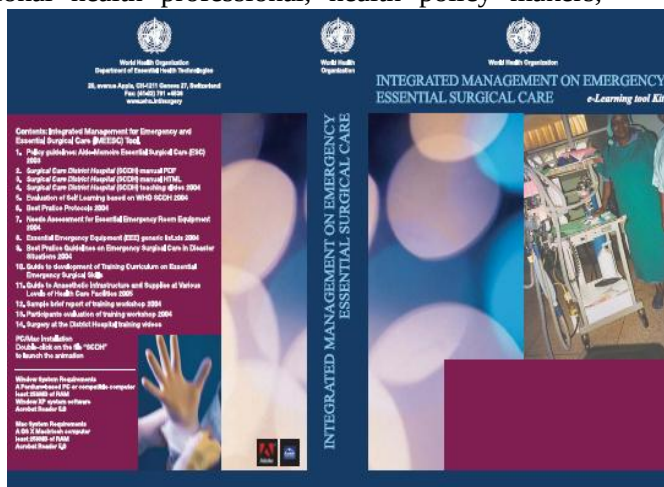


PIC: 2 66TH WORLD HEALTH ASSEMBLY

<http://www.who.int/surgery/publications/imeesc/en/index.html>

d. Inviting and constant interacting with multinational health professional, health policy makers, stakeholders and health ministry officials to join the WHO Med Net, so as to share and contribute to the WHO EESC program. This gave an excellent opportunity to learn different cultures and meet people from wide range of countries under a common roof of the pioneering institute of public health, WHO.

e. “WHO Global Alliance for Care of the Injured” held at 66th World health assembly gave a clear picture on the importance of trauma care and emergency surgical care services, it also gave an idea on the management process of the critical situation and what are the challenges to be underlined, that is time, resource, manpower, transport, logistics etc.



PIC 3: WHO EESC TOOL KIT MANUAL COVERPAGE

f. Assisting in preparation of List of participating WHO GIEESC members from African countries was prepared regarding the upcoming African regional workshop on August 2013 at Congo Brazzaville. This gave a learning perspective to identify the key personality responsible for the task to be done, plus it also gave an idea that which individual is active in the events of GIEESC.

g. Utilizing the WHO Situational Analysis Tool an Assessment of capacity for surgery, obstetrics and anaesthesia in 18 hospitals covering 7 countries, SEARO and EMRO regions was performed. Utilizing WHO assessment tool a survey on emergency, trauma, anesthesia, obstetrics and surgical care capacity across district hospitals, community health and primary health center in Rajasthan, (India) was formulated. This provided with the learning perspective that how WHO SAT generates an idea about the health situation of a region with all the different health modalities covered in a compact and easy format.

4. Assessment of capacity for surgery, obstetrics and anaesthesia in 18 hospitals covering 7 countries, SEARO and EMRO regions, utilizing a WHO assessment tool during the 2 months period (7.4.2013 -7.4.2013) of summer training at WHO HQ Geneva.

4.1 Objectives:

To survey infrastructure characteristics, personnel, equipment and procedures of surgical, obstetric and anaesthesia care in 18 hospitals across 7 countries, in SEARO and EMRO regions.

4.2 Introduction:

An emerging priority in health systems strengthening in developing countries is emergency and essential surgical care at district hospitals (Ozgediz et al. 2008b; Reich & Takemi 2009)⁶. Improving surgical, obstetrical and anaesthesia care capacities in district hospitals within low-income countries is an essential component of health care system delivery and also has the potential for being a cost-effective investment (Laxminarayan et al. 2006)⁷.

4.3 Methods:

Study area: SEARO and EMRO region.

Respondents: Hospital staff

Sample: n =18

A total of 55% (n = 10) were district hospitals/ general hospitals, and 33% (n = 6) were primary referral centres and 11% (n=2) were private, non-governmental or mission hospitals (annex 1).

Methods of data collection: Email survey

Tools of data collection

Tool for Situational Analysis (SAT) to Assess Emergency and Essential Surgical Care was utilized, which surveyed infrastructure, human resources, types of surgical interventions and equipment in each facility. It was developed by WHO Global Initiative Emergency and Essential Surgical Care (GIEESC) members in 2007 (http://www.who.int/surgery/publications/QuickSitAnalysis_EESC_survey.pdf, WHO 2010). The

assessment tool addresses four elements of surgical services: **infrastructure, human resources, types of surgical interventions and equipment**. All data were entered into the WHO database.

Data analysis

The percentage of hospitals performing procedures or referring for a particular procedure was calculated by dividing the number of hospitals reporting they performed the procedures by the total number of hospitals. To determine the overall availability of general patient care supplies, intra-operative equipment and supplies, anaesthesia equipment and supplies for adults, and anaesthesia equipment and supplies for children, the percentage of supply items the hospitals had available all the time under the type of category was noted. Then, the averages of the percentages were determined for each category.

Results

Table-1: Current status of emergency and essential services by four dimensions in SEAR and EMR member countries of WHO

Dimensions	AFGANISTHAN	INDIA	NEPAL	LIBYA	ISRAEL	PAKISTAN	SRILANKA
Infrastructure:	82%	96%	76%	100%	100%	100%	61%
Human Resources:	59%	62.3%	62%	87%	87%%	95%	31.25%
Interventions/ Referrals:	73.5%	71.3%	77%	77%	100%	83%	63.8%
Equipment and Supplies:	82.25%	92.8%	97%	98%	100%	96%	77%

Survey of hospitals n=4 in Afghanistan showed more than 80% presence of infrastructure and basic facilities like, running water and electricity. More than 80% of the basic supplies needed for general patient care and basic intra-operative care, including sterilization machines were present, although only 25% of the hospitals had anaesthesiology machine. 75% of all the hospitals had a designated area for emergency care and an area designated for postoperative care or recovery room. There were 12 surgeons in 4 hospitals and 16 anesthesiologist but only 50% of the hospitals had anesthesiologist, 50% of the hospitals had obstetric specialist totaling to 3 doctors. More than 70% of all the 34 interventions (refer table 3) were performed by the 4 hospitals.

Survey of hospitals n=6 in India showed more than 80% presence of infrastructure and basic facilities like, running water and electricity. More than 80% of the basic supplies needed for general patient care and basic intra-operative care, including sterilization machines were present in 5 out of 6 hospitals, 83% of the hospitals had anaesthesiology machine, and 83% of all the hospitals had a designated area for emergency care and an area designated for postoperative care or recovery room, although the primary health center lacked the same. There were 99 surgeons in 6 hospitals and 56 anesthesiologist and 45 obstetric specialists, although only 50% of the hospitals had obstetric specialist, it was noticed that the primary referral centers lacked in human resource by 75% and was the primary reason for referral of critical cases. More than 70% of all the 34 interventions (refer table 3) were performed by the 6 hospitals.

Survey of HDCS Team hospital n=1 in Nepal showed more than 70% presence of infrastructure and basic facilities like, running water and electricity. More than 80% of the basic supplies needed for general patient care and basic intra-operative care, including sterilization machines were present in the hospital, although the hospital lacked anaesthesiology machine. The hospital did not have an area designated for emergency care and neither had an area designated for postoperative care or recovery room. There were no surgeons or any anesthesiologist but had one obstetric specialist and 3 general physicians totaling to 4 doctors. More than 70% of all the 34 interventions (refer table 3) were performed by the hospital.

Survey of Abu Salem trauma hospital n=1 in Libya showed 100% presence of infrastructure and basic facilities like, running water and electricity. More than 85% of the basic supplies needed for general patient care and basic intra-operative care were present in the hospital. The hospital had anaesthesiology machine and sterilization machine. The hospitals had a designated area for emergency care and an area designated for postoperative care or recovery room. There were 40 surgeons in the hospital and 2 anaesthesiologists but, the hospital did not have any obstetric specialist. There were around 90 General Doctors providing surgery and 15 General Doctors providing anesthesia. More than 70% of all the 34 interventions (refer table 3) were performed by the hospital.

Survey of Western Gallies Hospital n=1 in Israel showed 100% presence of infrastructure and basic facilities like, running water and electricity. The basic supplies needed for general patient care and basic intra-operative care were 100% in the hospital, including sterilization machines and anaesthesiology machine. The hospitals had a designated area for emergency care and an area designated for postoperative care or recovery room. There were 28 surgeons in the hospital 8 anaesthesiologists and 5 obstetric specialists although the hospital lacked general physicians. All the 34 interventions (refer table 3) were performed by the hospital.

Survey of hospitals n=3 in Pakistan showed 100% presence of infrastructure and basic facilities like, running water and electricity. More than 90% of the basic supplies needed for general patient care and basic intra-operative care were present in the hospital. The hospital had anaesthesiology machine and sterilization machines. The hospitals had a designated area for emergency care and an area designated for postoperative care or recovery room. There were 75 surgeons, 31 anaesthesiologists, and 16 obstetric specialists. There were around 86 General Doctors providing surgery and 14 General Doctors providing anesthesia. More than 80% of 34 interventions (refer table 3) were performed by the hospital.

Survey of hospitals n=2 in Sri Lanka (Jaffna) showed only 60% presence of infrastructure and basic facilities like, running water and electricity. 50% of the hospitals did not have uninterrupted water, electricity and oxygen. More than 75% of the basic supplies needed for general patient care and basic intra-operative care, including sterilization machines were present in the hospitals, although the hospital lacked anaesthesiology machine. The hospital did not have an area designated for emergency care and neither had an area designated for postoperative care or recovery room. There were no surgeon, anaesthesiologist or obstetric specialist but 7 general physicians providing surgery and anesthesia. Only 33% of all the 34 interventions (refer table 3) were performed by the hospital and most of the complicated and critical cases were referred due to lack of skilled manpower.

Overall result (average percentage)

The average number of beds at each facility was 350. All the hospitals surveyed had at least one operating room, with 77% reporting at least two. 28% hospitals reported no formal designated area for post-operative care or for emergency care.

The majority of hospitals reported having basic services, running water (94%) and electricity (82%). More than 85% had the basic supplies needed for general patient care and basic intra-operative care, including sterilization (Table 2).

In total, there were 734 full-time surgical, obstetrical and anaesthetic providers in the 18 facilities.. Surgeons who had completed a formal residency in general surgery comprised 34% similarly 16%

anaesthesiologist and 9% obstetricians / gynaecologists. General medical officers providing surgical care comprised 39% of the workforce 77% of the surveyed facilities reported having a fully qualified surgeon, and 50% reported having a qualified obstetrician/gynaecologist available to perform surgical or obstetrical procedures.

All facilities reported having some basic supplies for general patient care. More than 85% of the hospitals had the following were readily available: stethoscopes, examination tables, blood pressure cuffs, adhesive tape, sterile gauze dressings, sterile bandages, soap, Foley catheters, batteries for flashlights, suction pumps, thermometers scalpels, retractors, sutures, scissors, forceps, sterile gloves and sterilizer and light sources. All hospitals had at least one basic intra-operative item needed for basic surgical care.

Most district hospitals 71% did not have the capacity to manage emergencies and an average of 32% of the facilities reported referring patients requiring one of the procedures to a regional hospital. The most common overall reason that the hospital referred patients for one of these procedures was attributable to lack of surgical skills among the physician staff (35%). The second most common reason was non-functional equipment (17%), followed by lack of supplies and drugs (13%).

More than 80% of hospitals reported having nurse anaesthetists to provide anaesthesia care. While 61% of the hospitals reported having a functional anaesthesia machine. The majority 89% of hospitals did report, to perform general anaesthesia, spinal anaesthesia, ketamine anaesthesia and regional anaesthesia.

Discussion

This study aimed at assessing the surgical, obstetrical and anaesthesia capacity in terms of infrastructure characteristics, personnel, procedures and referrals as well as equipment at 18 health facilities across 7 countries, in SEARO and EMRO regions utilizing the WHO Tool for Situational Analysis. In the above survey it has been observed that developed country such as Western Gallies Hospital Israel in the EMRO region present a different picture of trained human resource changing the referral perspective of an hospital facility, such observation is also seen in private hospital facilities in India. The greatest barrier to improving surgical care at most hospitals is the limited training received by medical personnel currently performing emergency and essential surgical and obstetric procedures. The hospitals in the survey are relatively well equipped. Our study shows that the lack of adequate emergency and essential surgical care is mostly attributable to the shortage of skilled surgical providers and not necessarily attributable to unavailable equipment or facilities. Although the health facilities were generally well-equipped to provide obstetrical and general surgical care, formal training of those providing surgical and anaesthesia care was limited.

COUNTRY	AFGHANISTAN				INDIA						NE PA L	LIB YA	ISR AEL	PAKISTAN			SRI LANKA		
Health centers:	Bam yan Provi ncial Hosp ital	Andk hoy Distri ct Hospi tal, Farya b Provi nce	Jamu riate hospi tal kabul	Jalal abad Publi c hosp ital	Mak und a Chri stian Lepr osy & Gen eral Hos pital	CH C Jod hpu r	Civil hospit al shilon g(GH)	Arm y Hosp ital Del hi	Com man d Hospi tal Air Forc e,	Push panjal i Cross lay Hospi tal	HD CS TEA M Hos pital	Abu Sal em trau ma hos pital	West ern Galli es Hos pital	Che st Hos pital	M.S Lah ore Gen eral Hos pital	Mia n Mu nshi Hos pital Lah ore	DH Jaffa na	DH Valrc henai	Perce ntage%
Section A: Infrastructure																			
1. Population served by this health facility-	3792 00	100,0 01- 200,0 00	3500 00	2000 00	500 000	100 00	10000 0	100 000	5000 0	1000 000	100 000	100 000	5000 0	100 000	600 000	269 107	3204	2000 00	
2. Number of beds-	51- 100	21-50	51-80	500	100- 200	25	301- 400	100 0	800	300	21- 50	300 - 400	700- 1000	401 - 500	100 0	500 - 700	48	200	350 AVR
3. Number of total functioning operating rooms (major and minor)-	1-2	1-2	3-4	3-4	3-4	2-4	5-10	15	9	12	2	5- 10	11- 20	10	11- 20	5- 10	1	1-2	
4. Is oxygen supplied? Oxygen Cylinder-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	100%
5. Is the oxygen supply? Uninterrupted-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	94%
6. Is the running water? Uninterrupted-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	94%
7. Is the electricity source? Uninterrupted-	yes	interr upted	interr upted	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	interr upted	yes	83%/16%
8. Do you have an operational power generator?-	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	100%
9. Is there functioning anaesthesia machine-	no	yes	no	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	no	61%
10. Is there an area designated for emergency care?	yes	yes	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	yes	77%
11. Is there an area designated for postoperative care or recovery room?	yes	yes	yes	no	yes	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	no	no	72%
12. Do you keep medical records?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	100%
13. Functioning X ray machine	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	72%
Section B: Human Resources																			
Surgeons-	2	1	1	8	2	0	11	20	33	33	0	40	28	4	58	13	0	0	77%
Anaesthesiolo gists Physician	0	0	2	14	2	0	3	26	7	18	0	2	8	2	24	5	0	0	66%
Obstetrician/gy naecologists-	1	2	0	0	0	0	0	15	3	27	1	0	5	0	12	4	0	0	50%
General doctors providing surgery-	1	0	6	8	2	2	0	30	0	0	3	90	0	10	56	20	0	7	66%
General doctors providing anesthesia-	0	1	0	0	0	0	0	22	0	0	0	15	0	3	9	2	0	0	33%
Nurse/Clinical/ Assistant medical officers -	2	0	2	2	2	0	5	22	11	0	2	60	3	15	10	14	0	2	77%
Surgical Technician/Cli nical/Assistant medical officers-	0	0	0	3	0	0	9	15	20	0	1	80	3	20	27	9	1	0	61%
Paramedics/Mi dwives-	0	14	4	2	50	9	15	75	68	250	15	280	12	10	67	18	1	8	94%
Section C: Interventions	32/3 4	19/34	20/34	34/3 4	30/3 4	5/3 4	28/34	35/ 34	35/3 4	17/34	24/3 4	27/ 34	35/3 4	10/ 34	35/ 34	24/ 34	6/34	17/34	68%
Referrals:																			32%
Section D: Equipment and Supplies-	68/7 0 97%	68/70 97%	35/67 52%	56/6 7 83%	65/6 7 97%	50/ 67 74 %	58/67 86%	67/ 67 100 %	67/6 7 100 %	67/67 100%	65/6 7 97%	66/ 67 98 %	67/6 7 100	66/ 67 98 %	67/ 67 100 %	62/ 67 92 %	28/70 40%	54/70 77%	88%

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APPENDIX

Table 3- 34 interventions reviewed in the assessment.

1. Resuscitation (airway, hemorrhage, peripheral percutaneous intravenous access, peripheral venous cut down)
2. Cricothyroidotomy/Tracheostomy
3. Chest tube insertion
4. Removal of foreign body (throat/eye/ear/nose)
5. Acute burn management
6. Incision & drainage of abscess
7. Suturing (for wounds, episiotomy, cervical & vaginal lacerations)
8. Wound debridement
9. Caesarean section
10. Dilatation & curettage/vacuum extraction (obstetrics/gyn)
11. Obstetric fistula repair
12. Tubal ligation/vasectomy
13. Biopsy (lymph node, mass, other)
14. Appendectomy
15. Hernia repair (strangulated, elective, congenital)
16. Hydrocelectomy
17. Cystostomy
18. Urethral stricture dilatation
19. Laparotomy (uterine rupture, ectopic pregnancy, acute abdomen, intestinal obstruction, perforation, injuries)
20. Male circumcision
21. Neonatal surgery: abdominal wall defect, colostomy imperforate anus, intussusceptions
22. Cleft lip repair
23. Clubfoot repair
24. Contracture release/skin grafting
25. Closed treatment of fracture
26. Open treatment of fracture
27. Joint dislocation treatment
28. Drainage of osteomyelitis/septic arthritis
29. Amputation
30. Cataract surgery
31. Regional anesthesia blocks
32. Spinal anesthesia
33. Ketamine intravenous anesthesia
34. General anesthesia inhalational

Table 4 : Essential equipments reviewed under the assessment*.

1. Resuscitator bag valve & mask (adult)
2. Resuscitator bag valve & mask (pediatric)
3. Stethoscope
4. Suction pump (manual or electric) with catheter
5. Blood pressure measuring equipment
6. Thermometer
7. Scalpel with blades
8. Retractor
9. Scissors
10. Oropharyngeal airway (adult size)
11. Oropharyngeal airway (pediatric size)
12. Forceps, artery
13. Gloves (sterile)
14. Gloves (examination)
15. Needle holder
16. Sterilizer
17. Vaginal speculum
18. Nasogastric tubes
19. Light source (lamp & flash light)
20. Intravenous fluid infusion set
21. Intravenous cannulas/scalp vein infusion set
22. Syringes with needles (disposable)
23. Sharps disposal container
24. Tourniquet
25. Needles & sutures
26. Splints for arm, leg
27. Urinary catheters (Foleys disposable)
28. Waste disposal container
29. Face masks
30. Eye protection
31. Protective gowns/aprons
32. Soap
33. Magill forceps (adult)
34. Magill forceps (pediatric)
35. Endotracheal tubes (adult)
36. Endotracheal tubes (pediatric)
37. IV infusor bags
38. Chest tubes insertion equipment
39. Laryngoscope Macintosh blades with bulbs & batteries (adult)
40. Laryngoscope Macintosh blades with bulbs & batteries (pediatric)
41. Cricothyroidotomy set

*Total number of equipments reviewed was more than the listed as per the change in SAT during the time period of 2010-2013

